

Attachment J-C21.3

Steam and Hot Water Boilers & Parameters

1. Water Quality Requirements

Steam and Hot Water Boiler System located at Glenn Research Center shall be maintained to the feed and condensate water quality listed in the table below.

Table A: Water Quality Requirements for Boiler Water *

PROPERTY OF WATER	REQUIRED LEVELS
pH	7.5 to 8.0
Hardness (Condensate/Makeup)	< 2 ppm CaCO ₃
Alkalinity	200-800 ppm CaCO ₃
Phosphate (PO ₄)	30-60 ppm
Total Dissolved Solids (TDS)	3000 ppm Max Water Tube Boiler 3500 ppm Fire Tube Boiler
Polymer	5-10 ppm
Silica	200 ppm Max
Suspended Solids	15 ppm Max
Iron	< 10 ppm
Dissolved Oxygen	< 7ppb
Causticity (OH)	20-200 ppm
Sulfite	20-40 ppm

*Unless specified differently from equipment manufacturer

Table B: Boiler Systems

LOCATION	ASSET #	EQUIPMENT DESCRIPTION	PRESSURE (PSIG)
STEAM BOILERS			
012-001		STEAM BOILER	100
012-001	1000623	STEAM BOILER	100
012-001		STEAM BOILER	100
012-001		STEAM BOILER	100
012-001	1000229	STEAM BOILER	100
301-001	1134215	STEAM BOILER	15
301-001	1134216	STEAM BOILER	15
301-001	1134217	STEAM BOILER	15
302-001-108	1117829	STEAM BOILER	15
333		STEAM BOILER	15
333		STEAM BOILER	15
HOT WATER BOILER SYSTEMS			
035/1	2000554	HW BOILER	
035/10	2000555	HW BOILER	
101-001	1112657	HW BOILER	
101-001	1112658	HW BOILER	

142-001	1130661	HW BOILER	
142-001	1130662	HW BOILER	
142-001	1130663	HW BOILER	
145-001-110	1005066	HW BOILER	
145-001-110	1005067	HW BOILER	
147-001-110	1130397	HW BOILER	
162-		HW BOILER	
162-		HW BOILER	
162-		HW BOILER	
162-		HW BOILER	
302-001-108	1117829	HW BOILER	
302-001-108	1117833	HW BOILER	
302-001-108	1117834	HW BOILER	
309-001	20000558	HW BOILER	
309-001	20000559	HW BOILER	
322-001	1117604	HW BOILER	
332-001	1118278	HW BOILER	
334-001	1121025	HW BOILER	
334-001	1121026	HW BOILER	
340-001	1120966	HW BOILER	
340-001	1120967	HW BOILER	
401-		HW BOILER	
402		HW BOILER	

2. Water Quality Assurance Testing

I. Hot Water Boiler Water

- i. Quarterly testing of low and medium temperature systems shall be completed and recorded for the following parameters

pH	
Nitrite or Molybdate	_____ ppm
Iron (total, as Fe (2) O(3))	_____ ppm
Written Evaluation Summary	

II. Steam Boiler Water

- i. Small and Medium Steam Boiler systems operating between 25 Hp and 100 Hp shall have the following test performed quarterly

pH	
Sulfite	_____ ppm
Alkalinity (CaCO ₃)	_____ ppm
Total Dissolved Solids	_____ ppm
Phosphate (PO ₄)	_____ ppm
Iron (total, as Fe (2) O(3))	_____ ppm
Condensate pH	
Condensate Conductivity	_____ micromho/cm
Condensate Hardness (CaCO ₃)	_____ ppm
Condensate Iron	_____ ppm
Make Up Water Hardness (CaCO ₃)	_____ ppm
Written Evaluation Summary	

- ii. Large Steam Boilers operating above 15 psig and > 100 Hp shall be analyzed a minimum of once a month.

pH	
Sulfite	_____ ppm
P -Alkalinity (CaCO ₃)	_____ ppm
Conductivity	_____ micromho/cm
Neutralized Conductivity	_____ micromho/cm
Total Dissolved Solids	_____ ppm
Phosphate (PO ₄)	_____ ppm
Polymer	_____ ppm
Silica	_____ ppm
Iron (total, as Fe (2) O(3))	_____ ppm
Condensate pH	
Condensate Conductivity	_____ micromho/cm
Condensate Hardness (CaCO ₃)	_____ ppm
Condensate Iron	_____ ppm
Make Up Water Hardness (CaCO ₃)	_____ ppm
Written Evaluation Summary	